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10/675,367	09/30/2003	Liang Jiang	132347-1	5979

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GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

EXAMINER	
ROE, JESSEE RANDALL	

ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
03/14/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/675,367	JIANG ET AL.	
	Examiner	Art Unit	
	Jessee Roe	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8 and 10-21* is/are pending in the application.

4a) Of the above claim(s) *11-18,20 and 21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-2, 4-8, 10 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Claims 1-2, 4-8 and 10-21 are pending wherein claim 1 is amended; claims 3 and 8 are canceled; and claims 11-18 and 20-21 are withdrawn from consideration.

Examiner Interpretation

The amended features of independent claim 1 include the omission of the recitation "with the remainder being" which indicates the degree of the presence of nickel. The omission of this phrase no longer necessitates a nickel-base alloy, but rather only requires the presence of nickel with no specific composition and therefore (broadens) changes the scope of the invention.

Status of Previous Rejections

The previous rejection of claims 1-2, 4-8 and 19 under 35 U.S.C. 102(b) as being anticipated by Twigg et al. ((US 3,723,108) is withdrawn in view of the Applicant's amendment to claim 1.

Claim Rejections - 35 USC § 112

Claims 1-2, 4-8, 10 and 19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a nickel-base alloy, does not reasonably provide enablement for base alloys other than nickel-base. However, the scope of independent claim 1 includes alloys other nickel-base. The specification does

not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

In regards to claim 1, the specification does not enable base alloys other than nickel-base. However, the scope of independent claim 1 would include other base alloys and only requires the mere presence of nickel and the specification does not enable how to make or use such alloys.

The Scope/Breadth of the Claims:
The claims refer to an alloy containing specific amounts of aluminum, titanium, chromium, niobium, tungsten, optionally a small amount of zirconium, and the mere presence of nickel.

The Nature of the Invention:
Nickel-base alloys containing aluminum, titanium, chromium, niobium, tungsten, and optionally a small amount of zirconium made by a variety of processes including P/M processes and casting. *In re Fisher*, 427 F.2d 833, 838-39, 166 USPQ 18 23-24 (CCPA 1970) ("In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement varies inversely with the degree of unpredictability of the factors involved.") and *In re Bowen*, 492 F.2d 859, 861-64, 181 USPQ 48, 50-52 (CCPA 1974) (section 112 requires that the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art).

The State of the Art:
Nickel-base alloys made by P/M methods and casting are known.

The Relative Skill in the Art:
Those in the art of P/M processes and casting of nickel-base alloys.

The Amount of Direction or Guidance Present:
Disclose the manufacture of nickel-base alloys by P/M processes and casting, but does not provide adequate direction for all other base alloys.

The Predictability or Unpredictability of the Art:
Could be predictable or unpredictable.

The Presence or Absence of Working Examples:

Examples of making the alloys are present with respect to nickel-base alloys, but no direction is given on other base alloys.

The Quantity of Experimentation Needed:
Could be "undue". The presence of a number of variables is not alone enough to create a heightened requirement of disclosure to satisfy the enablement requirement of section 112. *See In re Fisher*, 427 F.2d.833, 839 [166 USPQ 18] (CCPA 1970). One must inquire whether one of skill in the art would be required to conduct undue experimentation in order to produce all alloys within the scope of independent claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4-8, 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twigg et al. (US 3,723,108) in view of the ASM Specialty Handbook.

In regards to claim 1, Twigg et al. ('108) disclose a nickel-containing alloy comprising a composition as shown in the table below (col. 1, line 71 – col. 2, line 33).

Element	From Instant Claims (weight percent)	Twigg et al. ('108) (weight percent	Overlapping Range (weight percent
Cr	about 14 – about 28	23.5 – 26	23.5 – 26
Nb (Cb)	about 0.8 – about 3	about 0.25 to 2	about 0.8 to 2
Ti + Al	about 3 – about 9	4.25 to 5.6	4.25 to 5.6
Zr	up to about 0.20	up to about 0.15	up to about 0.15
W	about 1 – about 3	-	-
Ni	Present	Remainder	Remainder

Still regarding claim 1, Twigg et al. ('108) further disclose that the ratio of titanium to aluminum would be from about 1:1 to 4:1, which overlaps the range of about 0.5 to

about 1.5 as in the instant invention. Twigg et al. ('108) also disclose that tantalum may be introduced incidentally with columbium in an amount of up to about one-tenth thereof, which would meet the limitation of being substantially devoid of tantalum.

Still regarding claim 1, Twigg et al. ('108) disclose a nickel-containing alloy as shown above comprising 0.50 to 2.0 weight percent molybdenum (col. 1, line 71 – col. 2, line 3), but Twigg et al. ('108) do not specify that the nickel-containing alloy would comprise tungsten.

The ASM Specialty Handbook disclose that molybdenum and tungsten would both perform the function of improving high temperature strength and creep strength of nickel-base alloys (pg. 167).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a corresponding amount of tungsten for molybdenum, as disclosed by the ASM Specialty Handbook, in the nickel-containing alloy, as disclosed by Twigg et al. ('108), because molybdenum and tungsten would be functionally equivalent in improving high temperature strength and creep strength, as disclosed by the ASM Specialty Handbook. MPEP 2144.06.

With respect to the atomic ratio of aluminum to titanium being about 0.5 to about 1.5, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, Taklatwalla v. Marburg, 620 O.G. 685, 1949 C.D. 77, and In re Pilling, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more

than routine investigation by those of ordinary skill in the art. In re Austin, et al., 149 USPQ 685, 688. It would have been obvious to one of ordinary skill in the art to select the desired amounts of titanium and aluminum from the ranges disclosed by Twigg et al. ('108) such that the formula would be satisfied because Twigg et al. ('108) teach the same utility throughout the disclosed ranges.

In regards to claim 2, Twigg et al. ('108) disclose that 4.25 to 5.60 weight percent titanium and aluminum would be present in the nickel-containing alloy, which would be within the range of about 3 to about 9 weight percent titanium and aluminum (col. 1, line 71 – col. 2, line 33).

In regards to claim 4, Twigg et al. ('108) disclose that about 4.50 to 7.6 weight percent titanium, aluminum, and niobium (columbium) would be present in the nickel-containing alloy, which would be within the range of about 3 to about 12 weight percent titanium, aluminum, and niobium as claimed in the instant invention (col. 1, line 71 – col. 2, line 33).

In regards to claim 5, Twigg et al. ('108) disclose that about 40 to about 65 weight percent nickel would be present in the nickel-containing alloys, which would be within the range of about 40 to about 70 weight percent nickel (col. 1, line 71 – col. 2, line 33).

In regards to claim 6, Twigg et al. ('108) disclose that the nickel-containing alloy would comprise cobalt and carbon (col. 1, line 71 – col. 2, line 33).

In regards to claim 7, Twigg et al. ('108) disclose that the nickel-containing alloy would contain about 10 to 24 weight percent cobalt, which overlaps the range of about

10 to about 23 weight percent cobalt (col. 1, line 71 – col. 2, line 33).

In regards to claim 8, Twigg et al. ('108) disclose that the nickel-containing alloy would contain about 0.01 to about 0.2 weight percent carbon, which overlaps the range of about 0.02 to about 0.15 weight percent carbon (col. 1, line 71 – col. 2, line 3).

In regards to claim 10, Twigg et al. ('108) disclose that 0.001 to 0.05 weight percent boron would be added to the nickel-containing alloy, which overlaps the range of about 0.001 to about 0.025 weight percent boron.

In regards to claim 19, Twigg et al. ('108) disclose using nickel-chromium-cobalt alloys for gas turbine engine components (col. 1, lines 14-21 and col. 1, lines 61-70).

Claims 1-2, 4-6, 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toge et al. (JP 06-065691).

In regards to claim 1, Toge et al. (JP '691) disclose a nickel-containing alloy comprising a composition as shown in the table below (abstract and [0005]).

Element	From Instant Claims (weight percent)	Toge et al. (JP '691) (weight percent	Overlapping Range (weight percent
Cr	about 14 – about 28	10 – 30	about 14 to about 28
Nb	about 0.8 – about 3	0.1 – 5	about 0.8 to about 3
Ti + Al	about 3 – about 9	0.2 – 10	about 3 to about 9
W	about 1 – about 3	0.1 – 5.0	about 1 – about 3
Ni	Present	30 – 70	30 – 70
Fe	No base indicated	Remainder	Remainder

With respect to the claimed content of zirconium, the Examiner notes that the recitation "up to" would include 0 weight percent. Toge et al. (JP '691) do not specify the presence of zirconium and therefore meets the zirconium limitation of "up to about 0.2 weight percent zirconium" of claim 1.

The Examiner notes that the ranges disclosed by Toge et al. (JP '691) for carbon,

chromium, niobium, titanium, aluminum, tungsten, nickel and zirconium for a nickel-containing alloy are within the claimed ranges of the instant invention, which is a prima facie evidence of obviousness. MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed ranges from the ranges disclosed by Toge et al. (JP '691) because Toge et al. (JP '691) disclose the same utility throughout the disclosed ranges.

With respect to the atomic ratio of aluminum to titanium being about 0.5 to about 1.5, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, Taklatwalla v. Marburg, 620 O.G. 685, 1949 C.D. 77, and In re Pilling, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those of ordinary skill in the art. In re Austin, et al., 149 USPQ 685, 688. It would have been obvious to one of ordinary skill in the art to select the desired amounts of titanium and aluminum from the ranges disclosed by Toge et al. (JP '691) such that the formula would be satisfied because Toge et al. (JP '691) teach the same utility throughout the disclosed ranges.

In regards to claim 2, Toge et al. (JP '691) disclose that 0.2 to 10 weight percent titanium and aluminum would be present in the nickel-containing alloy, which would overlap the range of about 3 to about 9 weight percent titanium and aluminum (abstract and [0005]).

In regards to claim 4, Toge et al. (JP '691) disclose that about 0.3 to 15 weight

percent titanium, aluminum, and niobium would be present in the nickel-containing alloy, which would overlap the range of about 3 to about 12 weight percent titanium, aluminum and niobium of the instant invention (abstract and [0005]).

In regards to claim 5, Toge et al. (JP '691) disclose 30 to 70 weight percent nickel, which overlap the range of about 40 to about 70 weight percent nickel as claimed in the instant invention (abstract and [0005]).

In regards to claim 6, Toge et al. (JP '691) disclose that the nickel-containing alloy would comprise carbon (abstract and [0005]).

In regards to claim 8, Toge et al. (JP '691) disclose that the nickel-containing alloy would contain 0 to about 0.2 weight percent carbon, which overlaps the range of about 0.02 to about 0.15 weight percent carbon (abstract and [0005]).

In regards to claim 19, Toge et al. (JP '691) disclose that the nickel-containing alloy would be applicable as a gas turbine member [0002].

Response to Arguments

Applicant's arguments filed 18 December 2007 have been fully considered but they are not persuasive.

The Applicant primarily argues that even though two materials may offer certain benefits as indicated in the table (ASM Specialty Handbook), this does not make them functionally equivalent such that it would have been obvious to replace one with a corresponding amount of the other. In response, arguments of counsel cannot take the place of factually supported objective evidence. MPEP 2145.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

JR